



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

**Maine Woods Pellet Company, LLC
Somerset County
Athens, Maine
A-989-71-B-A (SM)**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #1**

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., § 344 and § 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Maine Woods Pellet Company, LLC (MWP) of Athens, Maine was issued Air Emission License A-989-71-A-N on March 12, 2008, permitting the operation of emission sources associated with their wood pellet manufacturing facility.

On November 20, 2008 stack testing was conducted on the stack serving the Dryer and Dryer Cyclone in accordance with License A-989-71-A-N. This testing demonstrated that MWP could not meet the PM emission limit set forth in their License. Therefore MWP has requested to amend their License to reflect the following:

1. Increase the emission limit for PM.
2. Incorporate dispersion modeling to demonstrate that the PM increase will not violate Maine Ambient Air Quality Standards.
3. Decrease the VOC emission limit, which will facilitate an increase the permitted annual operating time.
4. Increase the propane fuel limit.

B. Application Classification

The modification of a minor source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Levels" as defined in the Department's regulations. This modification is determined to be a minor modification of a synthetic minor source and has been processed as such.

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II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Dryer and Dryer Cyclone

The dryer has a rated maximum heat input capacity of 50 MMBtu/hr and fires wood dried to 10% moisture as fuel. The dryer also fires LP Gas as a flame stabilizer. In order to remain a minor source, MWP has accepted an operating limit of 7950 hours on a 12 month rolling total.

BACT for the Dryer and the Dryer Cyclone shall consist of the following:

1. PM/PM₁₀
General Process Source Particulate Emission Standard, 06-096 CMR 105 (last amended November 3, 1990) regulates PM emission limits from the wet scrubber exhaust stack. However, a PM emission limit of 8.5 lb/hr is more stringent and shall be considered BACT. The use of a wet scrubber for the control of PM shall be considered BACT. MWP shall test the scrubber stack for PM annually to demonstrate compliance. If MWP should demonstrate compliance for three consecutive years, MWP may request from the Department to reduce PM testing frequency to once every three years. The PM₁₀ limits are derived from the PM limits.
2. The VOC emission limit of 12.5 lb VOC/hr is based on other units of similar size and age. MWP shall test the scrubber stack for VOCs within 12 months of the effective date of this License for compliance purposes.
3. MWP shall be limited to firing 434,000 gallons of LP Gas on a 12 month rolling total, in the dryer. Records from the supplier documenting quantity delivered shall be maintained on a 12 month rolling total basis, for compliance purposes.
4. The BACT analysis outlined in License A-989-71-A-N for SO₂, NO_x, CO, and Opacity shall continue to be in effect.

C. Annual Emissions

1. MWP shall be limited to 7950 hours of operation on a 12 month rolling total.
2. MWP shall be limited to firing 434,000 gallons of LP Gas on a 12 month rolling total.
3. MWP shall be restricted to the following annual emissions, based on a 12 month rolling total:

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Dryer and Dryer Cyclone (from the wet scrubber stack)	33.8	33.8	20.3	19.9	60.0	49.7
Milled Material and Dust Recovery Cyclones (from the baghouse)	1.2	1.2	-	-	-	-
Total TPY	35.0	35.0	20.3	19.9	60.0	49.7

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from MWP, in conjunction with other sources, will not cause or contribute to violations of Maine Ambient Air Quality Standards (MAAQS) or to Class II increment standards for PM₁₀. Only PM₁₀ was addressed as part of this analysis as the SO₂, NO₂ or CO emissions were well below their respective modeling cutoff values defined in 06-096 CMR 115.

Since the current licensing action for MWP represents a minor modification to an existing minor source, it has been determined by MEDEP-BAQ that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

B. Model Inputs

The AERMOD-PRIME refined model was used to address standards and increments in all areas. The modeling analysis accounted for the potential of building wake and cavity effects on emissions from all modeled stacks that are below their calculated formula GEP stack heights.

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (USEPA).

A valid 5-year hourly off-site meteorological database was used in the AERMOD-PRIME refined modeling analysis. Five years of wind data was collected at heights of 10 and 70 meters at the Madison Paper Industries meteorological monitoring site from 1991-1995. Surface data collected at the Augusta State Airport FAA site were substituted for missing surface data. All other missing data were interpolated or coded as missing, per USEPA guidance.

The surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Caribou National Weather Service (NWS). Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per USEPA guidance.

All necessary representative micrometeorological surface variables for inclusion into AERMET (surface roughness, Bowen ratio and albedo) were calculated using AERSURFACE from procedures recommended by USEPA (2008).

Point-source parameters, used in the modeling for MWP are listed in Table III-1.

TABLE III-1 : Point Source Stack Parameters

Facility/Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (km)	UTM Northing NAD83 (km)
CURRENT/PROPOSED						
III. Maine Woods Pellets						
• Scrubber Stack	131.00	15.85	22.26	0.91	447.732	4977.133
1987 BASELINE						
Maine Woods Pellets						
• Maine Woods Pellets conservatively assumed no credit for any on-site sources existing in the 1987 baseline year.						
1977 BASELINE						
Maine Woods Pellets						
• No sources existed in the 1977 baseline year; no baseline credit to be taken.						

Emission parameters for MWP for MAAQS and increment modeling are listed in Table III-2. The emission parameters for MWP are based on the maximum license allowed (worst-case) operating configuration. For the purposes of determining PM₁₀ impacts, all PM emissions were conservatively assumed to convert to PM₁₀.

TABLE III-2 : Stack Emission Parameters

Facility/Stack	Averaging Periods	SO ₂ (g/s)	PM ₁₀ (g/s)	NO ₂ (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED							
Maine Woods Pellets							
• Scrubber Stack	All	nm	1.07	nm	nm	352.59	12.19
BASELINE – 1987							
Maine Woods Pellets							
• Maine Woods Pellets conservatively assumed no credit for any on-site sources existing in the 1987 baseline year.							
BASELINE – 1977							
Maine Woods Pellets							
• No sources existed in the 1977 baseline year; no baseline credit to be taken.							

Key: nm = not modeled

C. Single Source Modeling Impacts

Refined modeling was performed for a total of nine operating scenarios that represented a range of maximum, typical and minimum operations.

The AERMOD-PRIME model results for MWP alone are shown in Table III-3. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type. No further modeling was required for pollutant/terrain combinations that did not exceed their respective significance levels.

**TABLE III-3 : Maximum AERMOD-PRIME impacts from Maine Woods Pellets
Alone**

Pollutant	Averaging Period	Max Impact (µg/m ³)	Receptor UTM E (km)	Receptor UTM N (km)	Receptor Elevation (m)	Class II Significance Level (µg/m ³)
PM ₁₀	24-hour	26.55	447.748	4976.991	127.99	5
	Annual	2.00	447.732	4976.934	124.98	1

D. Combined Source Modeling Impacts

For predicted modeled impacts from MWP alone that exceeded significance levels, as indicated in boldface type in Table III-3, other sources not explicitly included in the modeling analysis must be accounted for by using representative background concentrations for the area.

Background concentrations, listed in Table III-4, are derived from representative rural background data for use in the Eastern Maine region.

TABLE III-4 : Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$)	Date
PM ₁₀	24-hour	42	1994 ¹
	Annual	10	

Notes:

¹ Background Site, Baileyville

MEDEP examined other nearby sources to determine if any impacts would be significant in or near MWP significant impact area. Due to the MWP location, extent of the predicted significant impact area and other nearby source's emissions, MEDEP has determined that no other sources would be considered for combined source modeling.

For pollutant averaging periods that exceeded significance levels, the maximum modeled impacts from the model predicting the highest concentrations were added with conservative rural background concentrations to demonstrate compliance with MAAQS, as shown in Table III-5. Because all pollutant/averaging period impacts using this method meet MAAQS, no further MAAQS modeling analyses need to be performed.

TABLE III-5 : Maximum Combined Sources Impacts

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Back-Ground ($\mu\text{g}/\text{m}^3$)	Max Total Impact ($\mu\text{g}/\text{m}^3$)	MAAQS ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	26.55	42	68.55	150
	Annual	2.00	10	12.00	40

E. Increment

The AERMOD-PRIME refined model was used to predict maximum Class II increment impacts in all areas.

Results of the Class II increment analysis are shown in Tables III-6. All modeled maximum increment impacts were below all increment standards. Because all predicted increment impacts meet increment standards, no further Class II increment modeling needed to be performed.

TABLE III-6 : Class II Increment Consumption

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (km)	Receptor UTM N (km)	Receptor Elevation (m)	Class II Increment ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	26.55	447.748	4976.991	127.99	30
	Annual	2.00	447.732	4976.934	124.98	17

Federal regulations and 06-096 CMR 140 require that any major new source or major source undergoing a major modification provide additional analyses of impacts that would occur as a direct result of the general, commercial, residential, industrial and mobile-source growth associated with the construction and operation of that source. Since this licensing action represents a minor modification to an existing minor source, no additional analyses were required.

F. Class I Impacts

Since the current licensing action for MWP represents a minor modification to an existing minor source, it has been determined by MEDEP-BAQ that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

G. Summary

In summary, it has been demonstrated that MWP in its proposed configuration will not cause or contribute to a violation of any SO₂, PM₁₀, NO₂ or CO averaging period MAAQS or any SO₂, PM₁₀ or NO₂ averaging period Class II increment standards.

ORDER

The Department hereby grants Air Emission License A-989-71-B-A subject to the following conditions:

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Condition (16) in License A-989-71-A-N:

(16) Dryer and Dryer Cyclone

- A. MWP shall be limited to 7950 operating hours on a 12 month rolling total. A written log documenting operating hours shall be maintained for compliance purposes. [06-096 CMR 115, BACT]
- B. MWP shall be limited to firing 434,000 gallons of LP Gas on a 12 month rolling total, in the Dryer. Records from the supplier documenting quantity delivered shall be maintained on a 12 month rolling total basis, for compliance purposes. [06-096 CMR 115, BACT]
- C. MWP shall operate the wet scrubber whenever the Dryer is in operation. [06-096 CMR 115, BACT]
- D. Emissions shall not exceed the following [06-096 CMR 115, BACT]:

Emission Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Dryer and Dryer Cyclone (from the wet scrubber stack)	8.5	8.5	5.1	5.0	15.1	12.5

- E. Visible emissions from the wet scrubber exhaust stack shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2), six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 101, BACT]
- F. MWP shall conduct VOC testing on the wet scrubber stack to ensure compliance within 12 months of the effective date of this License. [06-096 CMR 115, BACT]
- G. MWP shall test the scrubber stack for PM annually to demonstrate compliance. If MWP should demonstrate compliance for three consecutive years, MWP may request from the Department to reduce PM testing frequency to once every three years. [06-096 CMR 115, BACT]

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The following is a new condition:

- (21) MWP shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605).

DONE AND DATED IN AUGUSTA, MAINE THIS 15th DAY OF March 2010.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Brodeur
DAVID P. LITTELL, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-989-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 2/12/2010

Date of application acceptance: 2/17/2010

Date filed with the Board of Environmental Protection: _____

This Order prepared by Jonathan Voisine, Bureau of Air Quality.

